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<del></del>	OBTINE PROGRAM REGULATION ACT OF 1990	no persons	Application Number		887,497		8.3 VENO ONAS COMITO I NU	moer.
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(to	be used for all correspondence after initial	filing)	Art Unit	1.7.				
Ì			Examiner Name					
Tota	Number of Pages in This Submission	41	Attorney Docket Number	106	184			フ
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	Amendment/Reply		Petition Petition to Convert to a				ce, Brief, Reply Brief)	
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Ш	Response to Missing Parts/ Incomplete Application		e Action Under 37 CFI attachments: Int'l Sear					. **
	Response to Missing Parts under 37 CFR 1.52 or 1.53		French p			60 26	9 A	* 1
1	under 37 CFR 1.32 01 1.33							-
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	certify that this correspondence is being to mail in an envelope addressed to: Com-	acsimile tra	nsmitted to the USPTO or deposited w	ith the I	Jnited States	Postal Ser		je as
Турес	or printed Susan G. Bu	irt ,						
Signa	ture	Du	on D. Bur	1		Date	September 26, 2	2003

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

if you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

	CERTIFICATE OF MAILING OR TRA	NSMISSK	М		
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, Alexandria. VA 22313-1450 or transmitted by facsimile.					
Name (Print/Type)	Susan G. Burt				
Signature	Buson A. Burt	Date	September 26, 2003		

PATENT

# IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	)
	Attorney Docket No. 106184
Kyle P. Austin et al.	)
Application No. 09/887,497	) Examiner: Unknown ) .
Fileds Issue 22, 2004	) Group Art Unit: Unknown
Filed: June 22, 2001	<b>,</b>
REACTION AND REGENERATION	, , , , , , , , , , , , , , , , , , ,
SYSTEM	)

# SUPPLEMENTAL DISCLOSURE STATEMENT BEFORE MAILING OF FIRST OFFICE ACTION UNDER 37 C.F.R. §1.97(b)(3)

Commissioner for Patents Arlington, VA 22313-1450

Dear Sir:

In addition to the references cited in the Information Disclosure Statement filed with the above identified application, Applicant submits herewith documents with respect to which Applicant believes there may be a duty to disclose the existence and contents thereof. These documents are listed on Form PTO-1449 attached hereto.

All of the documents submitted herewith were cited in the International Search Report dated June 23, 2003, for the counterpart International Application No. PCT/US 02/20168.

One of the submitted documents, FR 2 160 269 A, is not in the English language. Therefore, Applicant also submits herewith the above mentioned International Search Report. Thus, the requirement under MPEP 609, III, A(3) ("Concise Explanation of Relevance for Non-English Language Information") is satisfied for FR 2 160 269 A.

Appln. No. 09/887,497 Attorney Docket 106184 The filing of this supplemental information disclosure statement shall not be construed as a representation that a search has been made (37 CFR 1.97(g)), nor as an admission that the information cited is, or is considered to be, material to patentability or that no other material information exists.

The filing of this supplemental information disclosure statement shall not be construed as an admission in any manner.

A copy of the above-mentioned International Search Report is attached hereto. Copies of all listed documents listed therein are also attached hereto, with the exception of U.S. patents and published patent applications pursuant to the July 11, 2003 notice entitled "Information Disclosure Statements May Be Filed Without Copies of U.S. Patents and Published Applications in Patent Applications filed after June 30, 2003" signed by Stephen G. Kunin, Deputy Commissioner for Patent Examination Policy.

Initialing of each document after its consideration by the Examiner is now respectfully requested in this matter.

Respectfully submitted,

UOP LLC

Michael A. Moore Attorney for Applicant

Reg. No. 41,203

Phone: (847) 391-2948 Fax: (847) 391-2387

MAM:sb

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	·	Sheet <u>1</u> of <u>1</u>
V.	ATTY. DOCKET NO.: 106184	APPLICATION NO.; 09/887,497
SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	APPLICANT: Kyle P. Austin et al.	
(Use several sheets if necessary)	Filing DATE: 06/22/2001	GROUP ART UNIT: Unknown

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE  IF //PPROPRIATE
11	3,647,680	3-7-1972	Greenwood et al.	208	65	9/25/1969
	4,048,057	9-13-1977	Murphy	208	89	1)-4-1976
	4,615,792	10-7-1986	Greenwood	208	134	4-25-1985
	4,961,907	10-9-1990	Herbst et al.	422	144	3-13-1989

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	INTERNATIONAL CLASSIFICATION	TRANSLATI YEB	ION NO
	FR 2 160 269 A	June 29, 1973	France	C 10 g 39/00//B 01 j 11/00	No	

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)						
DATE CONSIDERED						

**EXAMINER:** Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Appln. No. 09/887,497 Attorney Docket 106184

# PATENT COOPERATION TREATY

From the INTERNATIONAL SEA	RCHING AUTHORITY	MAM! P	CT			
To: UOP LLC Attn. Tolomei, John G 25 East Algonquin Roa Des Plaines, Illinois UNITED STATES OF AMER	d , 60017–5017	NOTIFICATION ( THE INTERNATIO OR THE	OF TRANSMITTAL OF NAL SEARCH FEPORT E DECLARATION FRule 44.1)			
	JUN 2 3 2003	Date of mailing (day/month/year) 23/06/	/2003			
Applicant's or agent's file reference	4011 D-0 C000-					
106184(2422)	UOP Patent Dept	FOR FURTHER ACTION	See paragraphs 1 and 4 below			
International application No. PCT/US 02/20168		Thternational filing date (day/month/year) 19/06/	/2002			
Applicant						
UOP LLC						
1. X The applicant is hereby no	ified that the International Search	Report has been established and	is transmitted herewith.			
Filing of amendments an	d statement under Article 19:	s of the International Application (s				
When? The time limit for International Sea	filling such amendments is normal rch Report; however, for more de	ily 2 months from the date of trans lalis, see the notes on the accomp	mittal of the anyling sheet.			
	International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Fascimile No.: (41-22) 740.14.35	, ·				
For more detailed instruc	tions, see the notes on the accor	mpanying sheet.	•			
2. The applicant is hereby no Article 17(2)(a) to that effect		Report will be established and that	at the declaration Linder			
3. With regard to the protes	t against payment of (an) addition	nal fee(s) under Rule 40.2, the app	olicant is notified that:			
the protest together was applicant's request to	rith the decision thereon has been forward the texts of both the prot	n transmitted to the International Brest and the decision thereon to the	ureau together with the a designated Offices.			
no decision has been	made yet on the protest; the app	licant will be notified as soon as a	decision is made.			
4. Further action(s): The applic	ant is reminded of the following:					
If the applicant wishes to avoic priority claim, must reach the i	l or postpone publication, a notice	pplication will be published by the li of withdrawal of the International in Rules 90 <i>bis</i> .1 and 90 <i>bis</i> .3, respo tion.	application, or of the			
		al preliminary examination must be onths from the priority date (in some				
before all designated Offices w		m the prescribed acts for entry into e demand or in a later election with by Chapter II.				
Name and mailing address of the in	ternational Searching Authority	Authorized officer				
-	, P.B. 5818 Patentlaan 2 0, Tx. 31 651 epo nl,	Nadine Klop				

Form PCT/ISA/220 (July 1998)

#### NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For monodetailed information, see also the PCT Applicant's Guide, a publication of WIPO.

in these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

### **INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19**

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

#### What parts of the International application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

## Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been its filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

## What documents must/may accompany the amendments?

#### Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

## NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new:
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

# The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

- [Where originally there were 48 claims and after amendment of some claims there are 51]:
   "Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
- Where originally there were 15 claims and after amendment of all claims there are 11]: "Claims 1 to 15 replaced by amended claims 1 to 11."
- [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims);
   "Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added," or "Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
- [Where various kinds of amendments are made]:
   "Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

#### "Statement under article 19(1)" (Rule 48.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international appplication is to be published.

It must be brief; not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Fisherence to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

# Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the international Bureau, also file a copy of such amendments with the international Preliminary Examining Authority (see Rule 62.2(a), first sentence).

### Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

# PATENT COOPERATION TREATY

# **PCT**

# INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

International application No.  PCT/US 02/ 20168  19/06/2002  19/06/2002  22/06/2001.  This International Search Report has been prepared by this international Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Search Report consists of a total of	Applicant's or agent's file reference	(Form PCT/ISA	of Transmittal of International Search Report /220) as well as, where applicable, Item 5 below.
International application No.   International filing date (asymmonth/year)   (Earliest) Pricrity Date (day/month/year)   PCT/ US 02/ 20168   19/06/2002   22/06/2001.    Applicant   UOP LLC   This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the international Bureau.   This International Search Report consists of a total of	106184(2422)	ACTION	
Applicant    UOP LLC	<u> </u>	International filing date (day/month/year)	(Earliest) Priority Date (day/month/year)
This International Search Report has been prepared by this international Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the international Bureau.  This International Search Report consists of a total of sheets.  [X] It is also accompanied by a copy of each prior and document cited in this report.  1. Basis of the report  a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filled, unless otherwise indicated under this item.  the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).  b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:  contained in the international application in written form.  It will be dispetive with the international application in computer readable form.  the statement that the subsequently for this Authority in computer readable form.  the statement that the subsequently turnished written sequence listing does not go beyond the disclosurs in the international application as filed has been furnished.  the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.  Certain claims were found unsearchable (See Box I).  Unity of invention is lacking (see Box II).  4. With regard to the title,	PCT/US 02/20168	19/06/2002	22/06/2001
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the text has been established by this Authority to read as follows:  5. With regard to the abstract,  X the text is approved as submitted by the applicant.  The text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may,	1 1	ubmitted by the applicant.	
5. With regard to the abstract,  X the text is approved as submitted by the applicant.  the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may,	1 =	•	
the text is approved as submitted by the applicant. the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may,		•	
the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may,	5. With regard to the abstract,		
	the text has been establi	shed, according to Rule 38.2(b), by this Auth	
6. The figure of the drawings to be published with the abstract is Figure No.	6. The figure of the drawings to be put	olished with the abstract is Figure No.	1
as suggested by the applicant. None of the figures.	as suggested by the app	olicant.	None of the figures.
because the applicant failed to suggest a figure.	because the applicant ta	illed to suggest a figure.	
X because this figure better characterizes the invention.	X because this figure better	er characterizes the invention.	

Form PCT/ISA/210 (first sheet) (July 1998)

International Application No PCT/US 02/20168

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 C10G35/12 B01J8/08

According to International Patent Classification (IPC) or to both national classification and IPC

### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols) IPC 7 C10G B01J C19G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUME	INTS CONSIDERED TO BE RELEVANT	· ·
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevarit to dalm No.
A	US 3 647 680 A (GREENWOOD ARTHUR R ET AL) 7 March 1972 (1972-03-07) cited in the application claim 1	1-10
A	US 4 615 792 A (GREENWOOD ARTHUR R) 7 October 1986 (1986-10-07) claim 1; figure 1	1-10
A	US 4 961 907 A (HERBST JOSEPH A ET AL) 9 October 1990 (1990-10-09) claim 1; figure 1	1-10
A	US 4 048 057 A (MURPHY JAMES R) 13 September 1977 (1977-09-13) figure 1	1-10
	-/	

X Further documents are listed in the continuation of box C.	Patent family members are listed in annex.
Special categories of cited documents:  "A" document defining the general state of the art which is not considered to be of particular retevance  "E" earlier document but published on or after the international filling date  "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  "O" document referring to an oral disclosure, use, exhibition or other means  "P" document published prior to the international filling date but later than the priority date claimed	"T" later document published after the international filling date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention.  "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone.  "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.  "&" document member of the same patent family
Date of the actual completion of the international search	Date of mailing of the international search report
12 June 2003	23/06/2003
Name and mailing address of the ISA  European Patent Office, P.B. 5818 Patentiaan 2  NL – 2280 HV Rijswijk	Authorized officer
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Deurinck, P

Form PCT/(SA/210 (second sheet) (July 1992)

International Application No PCT/US 02/20168

C.(Continua Category °	ion) DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2 160 269 A (INST FRANCAIS DU PETROL) 29 June 1973 (1973-06-29) figure 1	1-10
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Form PCT/ISA/210 (continuation of second sheet) (July 1992)

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Information on patent family members

International Application No PCT/US 02/20168

information on patent family monoc			PCT/US 02/20168		
Patent dox cited in sear		Publication date		Patent family member(s)	Publication date
US 3647	680 A	07-03-1972	AR AT BE CA DE DK ES FR	219262 A1 311525 B 764747 A1 938237 A1 2046853 A1 132446 B 383958 A1 2064274 A5	15-08-1980 26-11-1973 16-08-1971 11-12-1973 15-04-1971 08-12-1975 01-03-1973 23-07-1971
			GB GB JP MY NL OA PL SE US	1329098 A 1329097 A 1329096 A 49002161 B 12674 A 12774 A 7013973 A ,B, 4048 A 84614 B1 77702 B1 372774 B	05-09-1973 05-09-1973 05-09-1973 18-01-1974 31-12-1974 31-12-1974 29-03-1971 15-10-1979 30-04-1975 13-01-1975 03-04-1973
 US 4619		07-10-1986	US YU ZA ZA SU	3761390 A 236170 A ,B 7006449 A 7101948 A	25-09-1973 15-03-1980 26-04-1972 26-04-1972 
US 4961		09-10-1990	AU AU CA DE DE EP JP US	608770 B2 7791987 A 1297062 A1 3782221 D1 3782221 T2 0259155 A1 63069534 A 4871446 A	18-04-1991 10-03-1988 10-03-1992 19-11-1992 06-05-1993 09-03-1988 29-03-1988 03-10-1989
US 4048	3057 A	13-09-1977	NONE		
FR 2160	0269 A	29-06-1973	FR AR AT BE CA DE EG ES FR GB IT JP JP JP	2160269 A1 229665 A1 334492 B 969272 A 790431 A1 980281 A1 2255497 A1 2265608 C2 10731 A 408625 A1 2170899 A2 2175549 A2 1364617 A 1364616 A 974673 B 1014538 C 48062802 A 52048601 B 1177222 C 52107004 A	29-06-1973 31-10-1983 25-01-1976 15-05-1976 24-04-1973 23-12-1975 24-05-1978 31-12-1976 16-03-1976 21-09-1973 26-10-1973 21-08-1974 21-08-1974 21-08-1974 25-09-1980 01-09-1973 10-12-1977 14-11-1983 08-09-1977

Form PCT/ISA/210 (patent family annex) (July 1992)

Information on patent family members

International Application No PCT/US 02/20168

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
FR 2160269 A		JP	57047952 B	13-101982
		JP	1268412 C	10-061 <del>9</del> 85
		JP	52107005 A	08-091977
		JP	56040194 B	18-091981
·		JP	52107006 A	08-091977
		JP	56040195 B	18-091981
		NL	7215493 A .B,	18-051973
		NO	137555 B	05-121977
(X)		NO	751262 A ,B,	18-051973
		SE	394687 B	04-07-1977
		SE	408804 B	09-071979
		SE	7506318 A	03-06-1975
		US	4133743 A	09-011979
		US	4233268 A	11-111980
		US	4210519 A	01-07-1980
		ZĀ	7207952 A	25-07-1973